Introduction to simulink

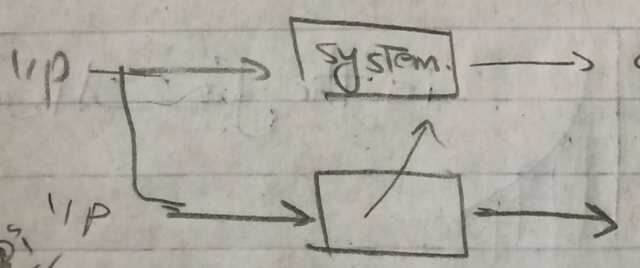
- analyising

closedloop
it still open Loop untill we start to enhance it
at this time we say it is closedloop.

physical meaning of stability.
all system are stable
stability ⟹ it appear when there are outside parameter effect on the system.
So we use stablity to protect the system.
from affecting be this parameters.

* energ is related to stability.
we need to reduce energy losses

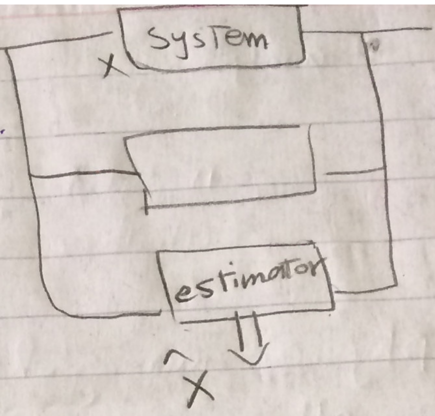
system → physical Body. need to future predection.
↘
① characteristic ((model, observation))
estimator dependent adaptor ((adapt itself and tell us the needed information))



o/p نظام آخر مماثل للأصلي

1- adap (A, B, C, D) & o/p الـ "energy" حتى يتساوى
↳ direct transmision
2- estimator
" All variable "

A ⇒ . eign value of system ≅ poles.
In matrix can transfer into the diagonal matrix in this case.
the diagonal values is equal eignvalue.



ex $\dot{X} = AX$

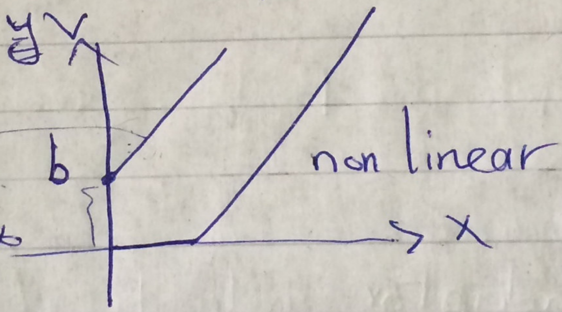
$SI\,X(s) - X_0 = A\,X(s)$

$(SI - A)\,X(s) = X_0$

Check linearty.

1 ohm — نشوف هل يحقق قانون
أي طالما زودت في الدخل يجب أن يكون الزيادة في الخرج بنفس المقدار

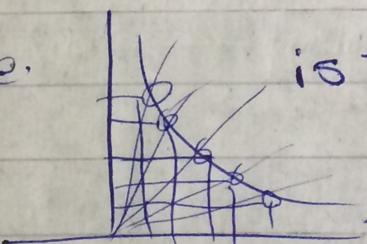
2- Super position.



$V = ax + b$

* في حالة تعرض النظام إلى
multi i/p —des (على)→ multi o/p

characteristic carve is the منحنى التشغيل



stability ← زادت
unstability ← قلت
energy. وهي عامل الاستقرارية

. The main objective of any system is to obtain eign value.

gordan Form
all the uper 1 أو 0
eign value diagonal → - stable.
[at least 1 (+) unstable.
[0 only stable ، critical.
[2 0's unstable.

$$\begin{pmatrix} \dot{x}_1 \\ \dot{x}_2 \end{pmatrix} = \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix}$$

$\dot{x}_1 = x_2 = Const.$

$x_2 = 0$ all the time ثابت

$$\frac{dx_1}{dt} = x(t) \Longrightarrow \boxed{x = t}$$

تكامل الصفرية

* إذا سبب مشاكل في المستقبل

بيشيل 1 من matrix.

ومهم

① eign value ② eign vector

المثا طرفي eignvalue

كي مراعات تراعي دراسه independancy

النظام

system can be invertable if all parameters ، eign val non Zero.

B

" Controllable or not Controllable ".

Controllable

I/P أدخل ← حصل على O/P نتيجة مقابلة

is the ability of the i/p to change the state of variable from one point to another in a specific time.